**Literature Review**

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Baseball vs. Softball

My science fair topic is to try and find out whether a baseball or softball goes the farthest distance when going at the same speed and which goes higher when going at the same speed and angle of projectory. To better understand my topic, information about actual baseballs and softballs is needed. Baseballs are spheres with a circumference from 9 to 9¼ inches. They are normally covered by two pieces of white leather, which can be horsehide or cowhide, and have red stitching. The inside is composed of yarn wound around a small cork, rubber or similar material ball. Their mass is 0.145 kg. Softballs can vary in their circumference from 11 and 12 inches and sometimes even 16 inches. Softballs are covered in either white or neon yellow leather or vinyl and it also has red stitching. Their core is normally a cork and rubber mixture or polyurethane. Its mass is between about 0.165-0.200 kg. Baseballs are used in the sport of baseball and softballs are used in the sport of fast-pitch, slow-pitch, or modified pitch softball. Baseball is normally a male sport while softball is normally a girl sport. This leads to the reason for my science fair topic. I think that boys have an easier sport, and since given the above measurements, a baseball would go farther and higher with less effort since it is smaller and lighter than a softball. After conducting my experiment I should be able to know for sure that baseball is an easier sport than softball, in the fact that it goes farther and higher without more effort from the player to do so. Some science fair projects that have already been done involving a baseball or softball are, “How does the baseball bat material affect its performance?”, and “How is the ball diameter related to the time it takes the ball to fall?” A science fair project about softball is also “How does a softball bat material affect its performance?” To conduct my experiment I will need the following, a softball pitching machine that is capable of going up to 60 mph, a baseball pitching machine that is capable of going up to 60 mph, a tape measure (in feet), colored tape, a baseball, a softball, a protractor, and a large open area to conduct the experiment in. To carry out my experiment I will first need to know how to use a pitching machine. Pitching machines consist of a rubber wheel, a metal base, a speed calculator, and handle that allows the operator to change the angle of the wheel. The wheel sits in the base and at the top there is a circular hole which the ball goes through and as it goes through the bottom of the balls catches on the quickly spinning wheel which sends the ball out of the machine. Pitching machines can be dangerous if not used correctly. If the ball used in the pitching machine is not dry it could cause it to slip and produce a bad pitch. Another danger is if the person operating the machine is careless and doesn’t take precaution, their hands, clothes, or hair could get caught in the pitching machine wheel causing serious injury. A third danger is the ball coming out of the pitching machine may hit someone or something and if it going at a fast speed cause serious injury. I will also need to be able to measure how high the baseball or softball goes up in part of my experiment. I plan on doing this by making a height graduation and estimating from that the height the ball reaches. I’ll make the height graduation by using the building at the location of my project, which is the Chanceford Township building, and measuring 5 feet up on the building, 10 feet up on the building, and the full height of the building. I’ll mark the heights with colored tape and when the ball goes up in the air, estimate about how many feet it goes up based on the height graduation. If the ball goes higher than the building I plan to just estimate to the best of my ability the height the ball reaches. The procedure or how I’m going to make my science fair project work is the following; First, I’m going to place the pitching machines at the same starting place. Then I will set the machine to 10 mph and then put a ball into each machine and measure how far the ball goes. I will do that 5 times with each machine. Then I’ll change speed of the machine to 45 mph then repeat measuring how far the ball goes 5 times. I also will do these steps when the machines are at 60 mph. I will record all the distances in a data table. Next, I’ll set the machines at 10 mph and angle the machine wheel 0°. Then I’ll put a ball into each machine and measure how high the ball goes on by estimating from a height graduation. I’ll repeat that 5 times. I’ll then change the angle to 20°, while keeping it at 10 mph and repeat with each machine 5 times. After that I’ll change the angle to 45° and repeat measuring how high the ball goes 5 times. Additionally, I’ll set the angle of the machine to 90° and repeat the steps 5 times. Finally I’ll also put those measurements in the data table. In conclusion, after I conduct my experiment I should be able to determine if a baseball or softball will go farther and higher when going at the same speed and angle of projectory.